CLAIMS

1. A holographic record carrier in or from which information is recorded or reproduced by irradiation of light, characterized by comprising:

a holographic recording layer for storing a light interference pattern based on components of coherent reference light and signal light as a diffraction grating in the inside thereof; and

a reflective function layer laminated on a side opposite to a light incidence side of said holographic recording layer, said reflective function layer being sensitive to the intensity of irradiated light so that a non-reflective region appears in an irradiated portion thereof.

2. The holographic record carrier according to claim 1, wherein said non-reflective region of said reflective function layer has a transmittance as a characteristic value higher than that at the time of non-irradiation of light.

3. The holographic record carrier according to claim 1, wherein said non-reflective region of said reflective function layer is a pinhole.

4. The holographic record carrier according to claim 1, wherein said non-reflective region of said reflective function layer has an absorption factor as a characteristic value higher than that at the time of non-irradiation of light.

5. The holographic record carrier according to claim 1, wherein said non-reflective region of said reflective function layer has a reflectivity as a characteristic value lower than

that at the time of non-irradiation of light.

6. The holographic record carrier according to any one of claims 1 to 5, wherein said reflective function layer has tracks extending apart from one another without crossing with one another for causing spots of light beams to be focused after passing through said holographic recording layer and said reflective function layer from an objective lens to follow said tracks.

7. The holographic record carrier according to any one of claims 1 to 6, wherein said tracks are formed in spiral shape, in spiral arc shape or in concentric shape.

8. The holographic record carrier according to any one of claims 1 to 7, wherein said tracks are formed in parallel to one another.

9. The holographic record carrier according to any one of claims 1 to 8, wherein said light interference pattern is formed by a first light beam to record a hologram, and said reflective function layer is sensitive to a second light beam to form said non-reflective region.

10. The holographic record carrier according to claim 9, wherein said holographic recording layer has a sensitivity to a wavelength of said first light beam higher than that to a wavelength of said second light beam, and said reflective function layer is made of a phase-change film or pigment film in which its sensitivity to the wavelength of said second light beam is set to be higher than that to the wavelength of said first light beam.

11. The holographic record carrier according to claim 9

or 10, wherein appearance of said non-reflective region is based on the wavelength of said first light beam.

12. A hologram apparatus for recording therein information as a diffraction grating, characterized by comprising:

a supporting portion for detachably holding a holographic record carrier comprising a holographic recording layer for storing a light interference pattern based on components of coherent reference light and signal light as a diffraction grating in the inside thereof, and a reflective function layer laminated on a side opposite to the light incidence side of said holographic recording layer, said reflective function layer being sensitive to the intensity of irradiated light so that a non-reflective region appears in an irradiated portion thereof;

an interference portion comprising an objective lens for irradiating a light beam to said holographic recording layer such that the light beam passes through said reflective function layer from said holographic recording layer, thereby forming a diffraction grating based on a light interference pattern in a portion in said holographic recording layer in which components of reference light and signal light of the light beam interfere with each other; and

a non-reflective region forming portion for, before formation of the light interference pattern, condensing the light beam on said reflective function layer through said objective lens in advance to form said non-reflective region in said reflective function layer.

13. The hologram apparatus according to claim 12, wherein

said interference portion comprises first and second light sources, the light interference pattern is generated by using a light beam from said first light source to record a hologram, and said reflective function layer is sensitive to a light beam from said second light source to form said non-reflective region.

14. The hologram apparatus according to claim 13, wherein recording of the hologram is performed on said non-reflective region.

15. The hologram apparatus according to claim 13 or 14, wherein irradiation is made such that an irradiation point of the light beam from said second light source on said reflective function layer is formed forward of an irradiation point of the light beam from said first light source on said reflective function layer in the same movement direction.

16. The hologram apparatus according to claim 13 or 14, wherein an irradiation point of the light beam from said second light source on said reflective function layer is formed backward of or so as to agree with an irradiation point of the light beam from said first light source on said reflective function layer in the same movement direction, and in this state, the irradiation of the light beam from said second light source is performed after the irradiation of the light beam from said first light source in the time sequence.

17. The hologram apparatus according to any one of claim 13 to 16, wherein said interference portion has an optical system comprising a spatial light modulator for spatially modulating the light beam, from said first light source, as reference light

according to the recorded information, thereby generating signal light, and merging the reference light and the signal light so that their optical axes approximately agree with each other.

18. The hologram apparatus according to any one of claim 13 to 17, wherein said non-reflective region forming portion has a servo control portion for performing servo control for causing a light beam from said second light source to follow the motion of said holographic record carrier by condensing the light beam from said second light source on said reflective function layer to detect its return light.

19. The hologram apparatus according to any one of claim 13 to 18, wherein an interval between a pair of non-reflective regions adjacent to each other is a minimum interval between the holograms adjacent to each other.

20. A hologram recording method of recording information in a holographic record carrier comprising a holographic recording layer for storing a light interference pattern based on components of coherent reference light and signal light as a diffraction grating in the inside thereof, and a reflective function layer laminated on a side opposite to the light incidence side of said holographic recording layer, said reflective function layer being sensitive to the intensity of irradiated light so that a non-reflective region appears in an irradiated portion thereof, said hologram recording method characterized by comprising:

an interference step of forming a diffraction grating based on a light interference pattern in a portion of the holographic recording layer where components of reference light and signal

light of the light beam interfere with each other, by irradiating a light beam to the holographic recording layer so that the light beam passes from the holographic recording layer through the reflective function layer; and

a step of forming the non-reflective region in the reflective function layer, before the interference step, by condensing the light beam on the reflective function layer through the objective lens in advance.

21. The hologram recording method according to claim 20, wherein the light beam is first and second light beams which are irradiated on said holographic record carrier so that their optical axes approximately agree with each other, the light interference pattern is generated by the first light beam to record the hologram, and said reflective function layer is sensitive to the intensity of the second light beam to form said non-reflective region.

22. The hologram recording method according to claim 21, wherein recording of the hologram is performed on said non-reflective region.

23. The hologram recording method according to claim 21 or 22, wherein irradiation is made such that an irradiation point of the second light beam on said reflective function layer is formed in front of an irradiation point of the first light beam on said reflective function layer in the same movement direction.

24. The hologram recording method according to claim 21 or 22, wherein an irradiation point of the second light beam on said reflective function layer is formed in a rear of or so as to agree with an irradiation point of the first light beam on

said reflective function layer in the same movement direction, and in this state, the irradiation of the second light beam is performed after the irradiation of the first light beam in the time sequence.

25. The hologram recording method according to any one of claims 21 to 24, wherein signal light is generated by a spatial light modulator for spatially modulating reference light from a first light source according to recorded information, and the reference light and the signal light are merged so that their optical axes approximately agree with each other, thereby generating the first light beam.

26. The hologram recording method according to any one of claims 21 to 25, wherein there is performed servo control for causing a light beam from said second light source to follow the motion of said holographic record carrier by condensing the light beam from said second light source on said reflective function layer to detect its return light.

27. The hologram recording method according to any one of claims 21 to 26, wherein the interval between a pair of non-reflective regions adjacent to each other is a minimum interval between the holograms adjacent to each other.